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### **Swedish Defence Acquisition Transformation—A Research Agenda**

Thomas Ekström, Swedish Defence Research Agency  
Michael Dorn, Swedish National Defence University  
Per Skoglund, Swedish Defence Materiel Administration

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# Swedish Defence Acquisition Transformation—A Research Agenda

**Thomas Ekström**—is Deputy Research Director at FOI, the Swedish Defence Research Agency. Ekström has been a military operational research analyst at FOI since 1994. For the past 15 years, his research focus has primarily been on military logistics and defence acquisition. Ekström is currently an industrial, part-time PhD candidate at Lund University in Sweden, where his research is focused on capability-based acquisition, and public private business models for defence acquisition, including performance based logistics and performance based logistics contracts. Ekström holds a Licentiate of Engineering<sup>1</sup> in engineering logistics, a Master of Science in military operational research, and a Master of Science in industrial engineering. [thomas.ekstrom@foi.se]

**Michael Dorn**—is an officer in the Swedish Armed Forces. In 2008 he became a PhD candidate at the Jönköping International Business School (JIBS). Presently he serves as a teacher at the Swedish National Defence University (NDU). His field has primarily been military logistics and defence acquisition. His research focuses on partnering arrangements and service innovation in a defence context. Dorn was promoted to lieutenant colonel in 2006 and holds an MBA in international logistics and supply chain management. [michael.dorn@fhs.se]

**Per Skoglund**—is an officer in the Swedish Armed Forces. Presently he serves as a senior advisor in logistics and supply chain management at the Swedish Defence Materiel Administration (FMV), which is the Swedish Defence Procurement Agency (DPA). Dr. Skoglund is also an associate professor at the Norwegian Defence University College (NDUC) and affiliated doctor at Jönköping International Business School (JIBS). Dr. Skoglund was promoted to lieutenant colonel in 2003, holds a PhD in business administration and a Master of Science in mechanical engineering. [per.skoglund@fmv.se]

## Abstract

The Swedish Armed Forces and the Swedish Defence Materiel Administration (FMV), that is, the Swedish Defence Procurement Agency (DPA), are currently undergoing a radical restructuring of defence logistics. The restructuring involves shifting roles and responsibilities, and transfer of resources, including personnel, from the Armed Forces to the DPA. To a large extent, the transfer of resources involves the merger of parts of FMLOG, the Swedish Defence Logistics Organisation (DLO), with the DPA. In the new business model, the DPA will assume responsibility for defence equipment from a life-cycle perspective, that is, both acquisition of equipment and provision of logistical support, whereas previously, the DPA was responsible for acquisition of equipment, and the Armed Forces was responsible for operations and maintenance.

The restructuring provides a highly dynamic and challenging environment for defence acquisition. This paper seeks to identify the most important challenges facing FMV and the Swedish Armed Forces, and to translate these challenges into an agenda for research in the area of defence acquisition transformation.

## Background to the Research

Since the ending of the Cold War, the defence sector, particularly the areas of military logistics and defence acquisition, has been undergoing a comprehensive

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<sup>1</sup> The Licentiate of Engineering, which is an intermediate postgraduate degree used only in a few countries, among them Sweden and Finland, is an academic step halfway between an MSc and a PhD.

transformation. There are several factors that explain this transformation: changes in defence and security policies for nations and organisations; reductions in defence expenditure (the peace dividend); participation in Peace Support Operations (PSOs); Lessons Learned (LL) from these operations, especially in the area of logistics; revolutionary development in the area of Information and Communication Technology (ICT); emergence of novel Commercial Best Practises (CBPs) in the areas of business and business logistics; and, at least in Europe, significant changes in the legislation regarding the conduct of public procurement.

In Swedish military logistics, the relatively easily described static supply and support chains of the Cold War era, designed for military units that stood in preparedness, Just-in-Case (JIC) of full-scale military conflicts in Europe, have been substituted for flexible, dynamic operational supply and support chains, designed for military units that are now being deployed on PSOs around the world. Hence, new types of missions have to be provided for. As a consequence, new military concepts have to be considered; new ICT is being implemented; and new CBPs are being evaluated, adapted, and adopted in order to enhance performance and ensure Value-for-Money (VfM).

In Swedish defence acquisition, the single Business Model (BM) of the Cold War era (i.e., procurement of equipment) has been replaced by a spectrum of emerging BMs, ranging from the traditional procurement of equipment, via acquisition of equipment and support, to Contracting for Availability (CfA) and Contracting for Capability (CfC; i.e., Performance Based Contracting [PBC]). Consequently, new CBPs are being evaluated, adapted, and adopted; Commercial and Military-Off-The-Shelf (COTS and MOTS) goods and services are being utilised; and Public Private Cooperation (PPC<sup>2</sup>), and Partnerships (PPPs) are being investigated and initiated in order to enhance performance and ensure VfM, while simultaneously mitigating operational risk in the supply and support chains.

Without prioritisation or any other particular relative order, the drivers for change for the Swedish defence acquisition after the ending of the Cold War can be summarised as follows:

- Significant changes in national security and defence policies;
- Shift from preparations for war in Europe to participation in PSOs;
- The ongoing transformation of the Armed Forces;
- Budgetary reductions, and transfer of resources from support to operations;
- Changes in legislation regarding the conduct of public procurement;
- LL from the first Gulf War;
- Revolutionary development in the area of ICT;
- Emergence of new CBPs in business logistics;

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<sup>2</sup> PPC is the umbrella term used by the Swedish Armed Forces and FMV to describe different forms of inclusion of the private sector in the delivery of goods and services to the Armed Forces. PPC encompasses Contracting out of services, Alternative financing solutions and Partnership solutions. Contracting out of services is made up of facility management, Contractor Support to Operations (CSO) and outsourcing. Alternative financing solutions include leasing and Private Finance Initiative (PFI) solutions. Partnership solutions are project alliances and strategic partnerships.

- Instructions from the Ministry of Defence (MoD) to utilise OTS to a larger extent;
- Instructions from the MoD to involve the private sector to a larger extent;
- Emergence of international cooperation in the areas of defence acquisition and strategic transportation; and
- Emergence of an array of potential types of Public Private Cooperation (PPC).

The Post–Cold War challenges facing the Swedish Armed Forces and FMV can be summarised as follows: to perform new types of activities, in remote locations, in cooperation with new partners, in novel ways, and using contracts rather than relying on legislation, while at the same time spending less money, by utilising OTS goods and services, capitalising on new ICT, adapting and adopting new CBP, using PPC, and engaging in international cooperation.

In combination, these drivers for change of defence acquisition constitute the condensed background to the proposed research agenda. These drivers for change can be traced back to the political prioritisations of participation in PSOs and of reducing costs in supporting activities in order to transfer resources over to operational activities.

However, in addition to the above description, there are two recent developments which must also be addressed. As a consequence of the objective to reduce costs in the supporting activities in order to transfer resources over to operational activities, the most recent transformational initiative involves the transfer of resources and tasks from the Armed Forces to FMV, and the changing of roles of responsibilities in the area of military logistics. FMV, which previously primarily acquired military equipment, must now also provide support to that equipment. In other words; FMV is moving from providing “Technology for Sweden’s security” to providing “Efficient defence logistics—when and where it is needed.” In the words of the Chief of Defence Logistics, the Swedish Armed Forces will focus on military operations, set the requirements for defence logistics, own all equipment, direct the funding, and be capability driven; whereas FMV will focus on defence logistics, carry out procurement, be responsible for the entire lifecycle, provide effective defence logistics—when and where it is needed, and be responsible for fleet management (Engevall, 2014).

Furthermore, because of the recent development in eastern Ukraine, the political attention in Sweden is now turning back to national defence. This means that the political prioritisations which have led to the above summary of the challenges facing the Swedish Armed Forces and FMV are likely to change in the very near future, but that will have to be the topic of a future paper. As of now, the “super tanker” is still navigating along the course set based on previous political prioritisations.

## Research Methodology

This paper is based on a compilation and condensation of research questions that have been suggested in previous and current research; an analysis of archival records and current documents to justify the validity of these research questions; and participatory observation in order to provide support for prioritisations among the research questions. This means that the proposed research agenda is primarily focused on research that is practically relevant for the Swedish defence authorities, that is, the Armed Forces and FMV, in order to provide answers to the difficult issues that will have to be dealt with in the next couple of years, and to a much lesser degree on research that would be academically relevant to the fields of defence acquisition and logistics, just for the sake of developing new theory.

The previous research that has been analysed includes a PhD thesis (Skoglund, 2012), a licentiate thesis (Ekström, 2012), two interview studies conducted within the Swedish Armed Forces Head Quarters (HQ) and the Swedish Defence Materiel Administration, FMV (i.e., the Swedish Defence Procurement Agency, DPA) in 2009 (Ekström, 2010a, b) and in 2013 (Axelson et al., 2013), and a literature review on Performance Based Logistics (Ekström, 2013a), as well as other reports (e.g., Ekström, 2013b; Selviaridis, 2014) from FOI, the Swedish Defence Research Agency. The reason for including two interview studies is that the first one was conducted before the still ongoing restructuring of defence logistics, whereas the second was conducted once implementation of the restructuring had started, which means that they provide different perspectives on the challenges facing the Swedish defence authorities.

The study of archival records and current documents includes analyses of governmental bills, official formal Swedish government inquiries, investigations and evaluations; the Swedish Armed Forces strategies, doctrines, and plans; and the ongoing restructuring project's reports. Participatory observation has been possible because Ekström has been placed as an operational research analyst at the Chief of Logistics Staff in the Swedish Armed Forces HQ the past six years, and since Dr. Skoglund is a senior adviser in logistics to top management at FMV. Ekström is currently participating in the production of the new Swedish defence logistics doctrine, and Dr. Skoglund is currently participating in the production of the new Swedish defence logistics strategy. In addition, Dorn is currently participating in the development of new academic courses in defence logistics at FHS, the Swedish National Defence University (NDU). This means that the authors have access to current thinking on the development of military logistics and defence acquisition in the Swedish Armed Forces HQ, FMV, FOI, and FHS. However, the study of archival records and current documents, as well as the insights from participatory observation, has predominantly been used to validate the suggestions for future research taken from previous and current research, and to prioritise these suggestions.

## **Previous Research and Current Transformation**

### ***The Interview Study in 2009 (Ekström, 2010a, 2010b)***

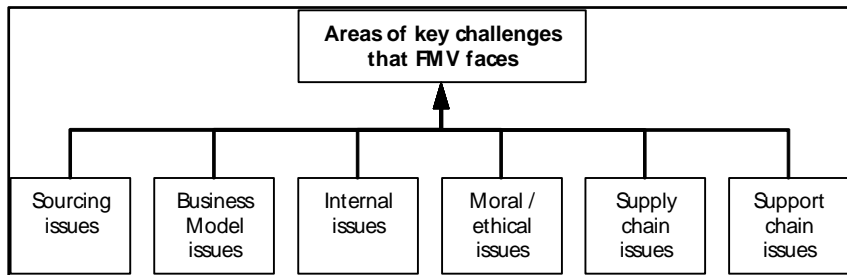
In order to establish which challenges the Armed Forces and FMV were facing because of the transformation of military logistics and defence acquisition, an interview study was conducted in 2009. When the interviews at FMV had been conducted, transcribed, and validated; divisive and agglomerative hierarchical Qualitative Cluster Analysis<sup>3</sup> (QCA) was applied in order to use the transcribed interviews to identify and categorise the data into key challenges that FMV (the Swedish DPA) was facing during its transformation. Under the top level of the resulting dendrogram, that is, under "Areas of key challenges that FMV faces," six different areas of challenges were identified. In no particular

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<sup>3</sup> QCA is a methodology used to group items according to attributes chosen by the analyst. Aldenderfer and Blashfield (1984, p. 7) describe QCA as a "generic name for a wide variety of procedures that can be used to create a classification" with specific procedures to create clusters of related entities, a dendrogram. QCA consists of divisive and agglomerative techniques, where divisive QCA starts from a large cluster and successively splits it into smaller clusters and agglomerative QCA starts with separate objects and successively combines them into larger clusters (Bailey, 1975).



order these second level issues are as follows: “Sourcing issues”; “Business Model issues”; “Internal issues”; “Moral and ethical issues”; “Supply chain issues”; and “Support chain issues,” as illustrated in Figure 1. Each of these different areas of challenges consists of a number of challenges at lower levels.



**Figure 1. Areas of Key Challenges That FMV Faces**  
(Ekström, 2012, p. 39)

The sourcing issues include “How should what to make, what to buy, and how to buy, be decided?”; “How should Value-for-Money (VfM) be calculated?”; “How should risk sharing, reward sharing, and information sharing, be handled?”; “How should OTS products and services be selected?”; “How should OTS be used in order to enhance performance?”; “How should the contributions of OTS be evaluated?”; and “How do roles and responsibilities change because of OTS products and services?”

The Business Model issues include “How should new ICT be selected?”; “How should new ICT be used in order to enhance performance?”; “How should the contributions of new ICT be evaluated?”; “How do roles and responsibilities change because of new ICT?”; “How should new CBPs be selected, adapted, and adopted?”; “How should new CBPs be used in order to enhance performance?”; “How should the contributions of new CBPs be evaluated?”; “How do roles and responsibilities change because of new CBPs?”; “How should new BMs be selected?”; “How should new BMs be used in order to enhance performance?”; “How should the contributions of new BMs be evaluated?”; “How do roles and responsibilities change because of new BMs?”; and “How should it be decided if the public or the private sector should be responsible for designing, building, financing, owning, operating, maintaining, and managing; and if/when leasing and transfer should occur?”

The internal issues include “How should the internal cultural challenges, which the external challenges bring about, be addressed?”; “What form of organisation would adequately meet the new challenges?” and “Which new competencies are required, and which existing competencies will become obsolete, because of the transformation?”

The moral and ethical issues include “Which, if any, moral and ethical issues are associated with risk transfer to suppliers, for example, contractors in the field?” and “How should risk transfer to contractors be addressed?”

The supply and support chain issues include the following: supply and support chain design issues; supply and support chain management issues; supply and support chain risk management issues; and supply and support chain performance measurement issues.

Under the supply and support chain issues, there is also a fourth level of questions: “How should the military supply and support chains be redesigned in order to accommodate the new requirements of the reformed Armed Forces?”; “How should strategic deployment (particularly transportation) capability for supplies and support be ensured?”; “How should overseas supply and support be ensured?”; “How should the supply and support chains be

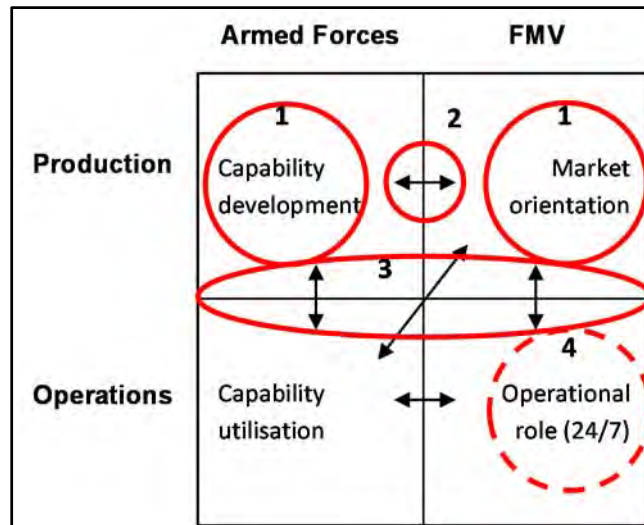


managed?"; "Who should manage the supply and support chains from 'factory to foxhole'?"; "How can contracts be used to manage the supply and support chains?"; "Which different types of risks are inherent in defence procurement and the military supply and support chains?"; "How have these risks traditionally been managed?"; "How do OTS, new ICT, CBPs, and PPPs influence existing risks?"; "What new risks are introduced by OTS, new ICT, CBPs, and PPPs?"; "How should the existing and new risks be managed?"; "Who should manage the existing and new risks?"; "How can contracts be used to manage the existing and new risks?"; "How should performance be evaluated?"; "Which measures of performance (MOPs) should be used?"; "How should OTS, new ICT, CBPs, and PPPs be utilised in order to enhance performance?"; and "How should the contributions of OTS, new ICT, CBPs, and PPPs be evaluated?"

Even though six years have now passed, most of these questions have yet to be addressed by defence acquisition managers and defence acquisition researchers. Consequently, the authors of this paper consider the results of this interview study to remain valid. If anything, these issues have become even more complex because of the transfer of resources from the Armed Forces to FMV, and because of the changing of tasks, roles, and responsibilities between the Armed Forces and FMV. Complexity is likely to increase even further because of the renewed political interest in territorial defence. The six identified issues, that is, "Sourcing issues"; "Business Model issues"; "Internal issues"; "Moral and ethical issues"; "Supply chain issues"; and "Support chain issues" will therefore be used to structure the proposed research agenda in the final chapter of this paper.

### ***The Interview Study in 2013 (Axelson et al., 2013)***

The latest in a sequence of transformational initiatives implemented in order to reduce costs in the supporting activities and to transfer resources over from "supporting activities" to "operational activities" is the so-called "restructuring of defence logistics." In order to establish which challenges this restructuring has presented the Armed Forces and FMV with, an interview study was conducted in 2013. Based on the interviews within the Swedish Armed Forces HQ and at FMV, a first step towards a research agenda was developed and proposed. The agenda describes four research areas that the researchers consider to be central to address in order to generate the necessary knowledge to establish and develop an effective and efficient defence logistics. The four areas, which are illustrated in Figure 2, were arrived at by categorising issues based on two perspectives, production and operations, for the two main actors, the Armed Forces and FMV. Axelson et al. (2013) emphasise that these research areas must be further discussed with the Swedish Armed Forces before the research agenda can be operationalised in terms of concrete research questions.



**Figure 2. Four Research Areas**  
(Axelson et al., 2013)

The implementation of the restructuring of the Swedish defence logistics (the new defence logistics transformational initiative), that is, the integration of logistical support and the acquisition of equipment, presents several challenges concerning how peacetime production should be conducted. Some of these challenges, for example, the creation of trust and understanding, are more related to the change project itself than to defence logistics. Focusing on the challenges concerning defence logistics, four research areas were identified.

In the production perspective, two research areas were identified. The first of these areas, marked with “1” in Figure 2, deals with how the Armed Forces and FMV are going to reach their respective objectives in the restructured defence logistics. The restructuring of defence logistics presents both the Armed Forces and FMV with new and changed tasks, roles, and responsibilities. One example is that the Armed Forces will present its requirements at “higher system levels,” and that FMV is given an extended role regarding systems integration. The restructuring gives rise to a number of questions, for example, “How will the required competence be provided in the long term, within the Armed Forces as well as within FMV?” There are also indications that the Armed Forces must become a “smarter customer” in order to present its requirements at higher system levels: “Which different solutions can contribute to the Armed Forces becoming a smarter customer?” Another interesting issue concerns outsourcing. To outsource activities to industry is not automatically an effective and efficient solution, which gives rise to the following questions: “When is outsourcing the most effective and efficient solution?”, “Why is outsourcing the most effective and efficient solution in these instances?”, and “Are there other, organic solutions?”

The second research area in the production perspective, marked with “2” in Figure 2, is the interaction between the Armed Forces and FMV. As a consequence of the restructuring of defence logistics, it is not only the respective tasks, roles, and responsibilities of the authorities that are affected, but also to a large extent the cooperation between the authorities. The scale of the changes is such that, as one respondent put it, “there is only one thing that is for certain, and that is that it won’t be implemented correctly from the beginning.” The following are among the challenges that will have to be faced: “How are the Armed Forces and FMV going to work together in the existing interfaces, for

example, in the early phases of development projects?”, “How are the Armed Forces and FMV going to participate in each other’s processes?”, “Which complications will follow as a consequence of the new interfaces?”, and “How will these complications be resolved?” There are also issues concerning monitoring and evaluation, for example, “How are the Armed Forces going to make sure that its units are being supplied with what they need?”

In the operations perspective, the interview study has revealed major challenges for defence logistics, particularly in two research areas. The first research area concerns the different interfaces between production and operations, marked with “3” in Figure 2. Even if the restructuring of the defence logistics primarily deals with production, there are bound to be consequences for operations. Which these consequences will be is far from clear, and there is a fear among the respondents that these consequences will be considerable: “Which consequences for operations will the restructuring bring about?” The division between the Armed Forces and FMV has been made along an artificial demarcation, based on what is “logistics close to combat” and what is not, which leads to the questions: “Which problems will occur because of the demarcation between logistics close to combat and other logistics support?”, “How should effect and capability be balanced?”, “How should operational effect and market orientation be balanced?”, and “How should it be ensured that increased performance in one area does not lead to decreased performance in another area?” In addition, it is not clear what consequences the shifting focus of political attention, from overseas operations back to territorial defence, will have on defence logistics. Consequently there is a need to investigate the effects of the restructuring of defence logistics on operations, and to find solutions to any potential problems.

The second research area in the operations perspective, marked with “4” in Figure 2, is the role of FMV in an operational perspective. Even if FMV has been supporting operations before, the restructuring of defence logistics brings about a radical change for FMV in this respect. FMV must be able to support all escalations on the preparedness staircase, which requires a major change of operations within FMV.

### ***The Literature Review of Performance Based Logistics (Ekström, 2013)***

The main purpose of this literature review was to provide the Swedish defence sector with an introduction to the concepts *Performance Based Logistics* (PBL) and *Performance Based Contracts* (PBC), and the following research questions were formulated:

- Research Question 1: What is the concept of Performance Based Logistics?
- Research Question 2: What is the concept of Performance Based Contracts?
- Research Question 3: In which types of defence acquisition projects have these concepts been utilised?

The secondary purpose of the literature review was to discuss potential implications for the Swedish defence sector by a full-scale implementation of performance based concepts. In addition to providing answers to the three research questions, Ekström (2013) also gave suggestions for future research, which are presented below.

International experience states that the costs of acquisition, that is, costs for development and production, constitute about one third of the entire life-cycle costs for complex military systems (e.g., platforms), whereas the costs for operations and maintenance make up the remaining two thirds. There are even sources that claim that the costs of operations and maintenance are two to three times as large as the costs for acquisition, which would mean that the costs for acquisition would constitute about one fourth to one third of the entire life-cycle costs. This insight is one of the driving forces behind the development towards PBL. It is not trivial to find out from official Swedish

sources whether or not this international rule of thumb is valid also in Sweden. There are, however, indications that the funding of the Swedish defence sector is based on other assumptions regarding life-cycle cost distribution. Consequently, it would be very interesting to conduct research regarding this issue: “Are the life-cycle costs of complex weapon systems distributed in a similar fashion in Sweden as they are in the international experience?” and, if not, “How are the life-cycle costs of complex weapon systems distributed in Sweden” and “What are the causes of these differences?”

If Sweden has indeed another distribution of life-cycle costs than the international rule of thumb, there are a number of propositions that would be interesting to investigate in future research:

- Proposition 1: The current distribution of life-cycle costs in Sweden is based on historical data from the total defence during the Cold War, when the systems were only used for preparedness, education, and training, and has not been updated based on data from the new deployed defence, when the systems are used also on operations.
- Proposition 2: Swedish weapons systems are currently not used as much as their international counterparts, which is why the costs of operations and maintenance are lower.
- Proposition 3: Swedish weapons systems are used as much as their international counterparts, but Sweden, nonetheless, does not allocate as much money on operations and maintenance as do other countries.
- Proposition 4: Swedish weapons systems are much better designed than their international counterparts, so that the costs of acquisition are higher, while the costs for operations and maintenance are lower.
- Proposition 5: The costs for acquisition, operations, and maintenance are not calculated and reported in the same way in Sweden as they are in comparable countries, which is why a just comparison is not easily done.
- Proposition 6: In Sweden, the costs for spare parts provisioning is reported as costs for acquisition, whereas comparable countries choose to report these costs as costs for operations and maintenance.

If Sweden were to contemplate a full scale implementation of performance based contracts, then it would, of course, be of the utmost importance to first of all evaluate the performance based contracts which have already been signed and which are currently being delivered. Consequently, the current research on the performance based outsourcing of the SK 60 Trainer Aircraft (see Dorn & Ekström, 2014, for preliminary results) is extremely important to support and to follow, in order to benefit from existing experience before embarking on any full scale implementation decisions.

Ekström (2013) reports on existing barriers and enablers for implementation of PBL, primarily from an American perspective. It is not unreasonable to assume that differences in, for example, scale, economy, culture, legislation, and maturity of the concept, would mean that a similar study in Sweden would produce other results. Consequently, it would be interesting to investigate which factors are considered to influence PBC in Sweden, if these factors are considered to be barriers or enablers when implementing PBL, and how these factors are related to each other. This research could be conducted in two steps. First of all, an interview study could be conducted with Subject Matter Experts (SMEs) in the Swedish MoD, the Swedish defence authorities, the Swedish defence industry, and Swedish universities, in order to identify barriers and enablers for implementation of PBL, from a Swedish perspective. Then a survey, directed towards several experts within the same

organisations, could be conducted in order to verify the results from the interview study, and in order to establish the relative importance of the identified factors.

It is obvious that many of the research results hitherto available are strongly dependent on the scientific paradigm and theoretical perspective of the researchers. Hence, it would be very interesting to investigate in future research how different presumptions in the positivistic paradigm influence the produced results, and if other presumptions in other paradigms would lead to completely different research results. As an example, it would be of interest to investigate how well penalty mechanisms really work in long term relations between the public and the private sector, and if they work equally well in different cultures.

Earlier studies, predominantly American in origin, have not been able to find more than a faint correlation between type of contract and the performance of that contract. In addition, earlier studies have been unable to explain why there is not a stronger correlation. A possible proposition to investigate could be that the predominantly quantitative, positivistic research tradition in the United States makes it difficult to identify qualitative explaining factors, such as relations and trust. Consequently, it would be of great interest to conduct a study based on the Nordic, qualitative, interpretivistic research tradition, in order to investigate what it is that makes certain contracts successful, whereas others fail (i.e., “Which are the Critical Success Factors (CSFs) for PBC?”).

Earlier studies build on theoretical perspectives such as “Transaction Cost Economics” (TCE), “Resource Based View” (RBV), “Principal Agent Theory” (PAT), and “Service Dominant Logic” (SDL). It would be of great interest to conduct a study based on, for example, “Network Theory” (NT) or “Social Network Theory” (SNT) in order to investigate to which extent relations and trust influence the outcome of PBC.

### ***Previous Research: Skoglund (2012)***

Skoglund (2012) reports on a PhD project that was conducted with the purpose to “analyse how the sourcing decisions impact the military logistics in the Swedish Armed Forces Peace Support Operations and the achievement of short-term and/or long-term objectives.” The research purpose led to the formulation of the following research questions:

- Research Question 1: What theoretical constructs within military logistics are vital for sourcing in PSOs?
- Research Question 2: What are the outcomes of the logistics key decision process?
- Research Question 3: How can the outcome of the sourcing key decisions impact the fulfilment of the logistics objectives in PSOs?

In addition to providing answers to these research questions, Skoglund (2012) identified five areas that deserve attention in future research.

Management of infrastructure facilities and running military camps in Peace Support Operations (PSOs) has links to local sourcing, contractor engagement in the operational area, and long term peace building and development. The camps in military operations are complex. They contain many different types of facilities with very different requirements. It also includes questions like supplier involvement and dual use of the facilities, that is, other use after the military has left the camp. They can also be an important part of the aid planning. After the PSO has left the area, the whole camp can be used for other purposes, for example schools or hospitals. Issues related to military camps should be addressed in future research.



Transports to, from, and within operational areas are often difficult matters in PSOs. Transit rules, customs, and hostile action are sources of special requirements on both capacities and suppliers. Many suppliers choose therefore not to offer their services to military organisations. The transport system for international operations requires further research, both regarding utilisation of the Armed Forces internal resources and the contracting of external resources from suppliers.

The importance of the national industry for national defence matters is a complex question. The conducted research clearly indicates that close supplier relations are beneficial for logistics in PSOs. But many other issues also come into play when the role of the national defence industry in the national defence is discussed. These aspects have an important connection to the legal framework for defence procurement. The Swedish Public Procurement Act (LOU) is a major obstacle to achieve effective and efficient logistics in PSOs. Further research in this area can either create a better understanding of the relevance of the Act and how to adjust logistics, or create substantive arguments for a change of the Act.

International coordination and cooperation of logistics in PSOs is a frequently discussed area. The conducted research has touched upon the issues of partnership relations, joint logistics command, and problems with national requirements. The cooperation and coordination of logistics is important for the future development of multinational PSOs. From a political perspective, joint logistics solutions have been discussed for several years, but the conducted research shows that joint solutions can be questioned, or at least require a solid framework. Further research in this area is needed to understand more about the different factors that affect joint or separate logistics solutions that build on cooperation.

The military product structure plays an important role for many military logistics areas. In the conducted research, the connection upstream to the suppliers was the most important aspect, but other logistics aspects exist when it comes to the planning of PSOs. Product structures and their relation to different logistics activities need to be further researched in order to understand the product's role in the supply chain and the supplier relations. How relevant for military logistics is Kraljic's (1983) portfolio management?

#### ***Previous Research: Ekström (2012)***

In 2012, Ekström (2012) reported on a licentiate research project which had been conducted with the purpose to "study, analyse, and evaluate Business Models regarding how they can handle the new supply concept that a new logistical interface brings about, with a particular emphasis on the risk taking that is part of the business concept." This research purpose was used to formulate three research questions:

- Research Question 1: How can a generic Business Model for a non-profit, governmental, Defence Procurement Agency be described?
- Research Question 2: Which strengths and weaknesses do different Business Models have in the context of defence acquisition?
- Research Question 3: Which risks are associated with different Business Models in the context of defence acquisition?

Since the reported research exclusively dealt with theoretical configurations of the generic Public Private Business Model (PPBM; see Ekström, 2012, 2014), rather than with established configurations with established labels, there were issues with the PPBM that remained to be addressed in future research before the PPBM could become really useful in

defence acquisition practise. Ekström (2012) provided the following suggestions for future research.

In current UK defence acquisition practise, different forms of Public Private Participation (see Ekström, 2012, 2014) are used as labels to differentiate between different forms of BMs for defence acquisition. Since such labels are powerful and useful in practise, the following research questions should be addressed in future research: “How can the generic PPBM be used in order to establish, define and label different classes (i.e., groupings of similar configurations) of PPBM for defence acquisition?” and “How can the PPBM be used in order to establish, define and label different individual BMs for defence acquisition?”

Competition and risk transfer are considered to be the most important determinants of Value-for-Money, VfM (Grimsey & Lewis, 2004, p. 135). According to the OECD (2008, p. 20), “the distinguishing feature that determines whether a project is defined as traditional public procurement or as a Public Private Partnership (PPP) should be whether or not a sufficient amount of risk has been transferred.” However, in the UK (Ekström, 2012), the Defence Industrial Strategy (DIS) is working against competition and the Purple Gate (PG) is working against risk transfer, which leads to the following research questions: “How can Value-for-Money (VfM) be ensured without competition and risk transfer?”, “How should traditional procurement be distinguished from emerging forms of Public Private Participation?”, and “How, since there is no risk transfer, can Cost-Plus Contracting arrangements be used for Public Private Participation?”

Defence procurement has two general objectives, which are not always compatible and consequently may necessitate policy trade-offs (Markowski et al., 2010, p. 3): the supply dependability objective (which means to assess and/or form dependable supply chains to secure reliable and sustainable deliveries of goods, services and know-how to form and maintain defence capabilities in the required state of operational readiness); and the Value-for-Money (VfM) objective (which means to buy what is needed cost effectively—which should not be taken to mean “at least cost”—and in accordance with Defence’s quality and schedule requirements). Political demands for higher performance (“Doing more with less”), that is, increased effectiveness (“faster, cheaper, better”) and efficiency (“Value-for-Money”), works against the dependability objective, which leads to the following research question: “How should a DPA combine the dependability objective with the VfM objective?”

There is no definitional clarity regarding what (i.e., different forms of Public Private Participation) fills the space between traditional government provision and full privatisation (OECD, 2008, p. 16; Grimsey & Lewis, 2004, p. 54). However, for the decision regarding entering into a Public Private Partnership (PPP), a Public Sector Comparator (PSC) has been suggested (Grimsey & Lewis, 2005). Consequently, the following research questions can be formulated: “How can different forms of Public Private Participation on the spectrum from government provision to privatisation be defined and differentiated from each other?” and “How can a PSC be used by a DPA when deciding between traditional procurement and emerging forms of Public Private Participation?”

Cost-saving was initially the primary reason behind outsourcing initiatives among governments worldwide. Later, the primary reason for outsourcing changed to improved speed or quality of services (Dickens Johnson, 2008). Flexibility (as described by Slack et al., 2010, p. 40) could be the next dimension of interest to governments. As early as three decades ago, Kraljic (1983) discussed what make-or-buy policies that would “give the best balance between cost and flexibility.” In the UK, flexibility is not even implicitly addressed in the political rhetoric, whereas in Sweden, it is explicitly addressed in military strategy (the



Swedish Armed Forces, 2007). Hence, the following research questions can be articulated: “How can the driving forces behind governmental outsourcing initiatives be described?” and “How can defence acquisition satisfy the customers’ requirements for quality, speed, dependability, and flexibility; and the politicians’ demands for reduced cost?”

For standard quality Off-The-Shelf (OTS) goods, price agreements are often sufficient. However, when buying services, performance agreements have become increasingly popular (van Weele, 2002, p. 162). According to Sols et al. (2007), the contractor’s “motivation to perform” is “high” for Performance Based Contracts (PBC), “medium” for Cost-Plus Contracts, and “low” for Fixed-Price Contracts; whereas the client’s “assurance relative to achievement of effectiveness goals” is “high” for PBC, “medium” for Cost-Plus and Fixed-Price Contracts with incentive mechanisms (i.e., CPIF and FPI), and “low” for Cost-Plus and Fixed-Price Contracts without incentive mechanisms (i.e., CPFF and FFP). This is not in line with “the common view,” that is, that Fixed-Price Contracts transfer risks to the supplier, whereas in a Cost-Plus Contract, the buyer assumes the risk and the supplier is not incentivised to reduce costs or improve performance (Glas et al., 2011). This leads to the following research questions: “How should PBC be described, that is, which dimensions could be used, in order to make a comparison with traditional Cost-Plus and Fixed-Price Contracts possible?” and “How do the emerging performance agreements such as PBC relate to traditional price agreements such as Cost-Plus and Fixed-Price Contracts?”

Performance Based Contracting (PBC), such as the UK MoD Contracting-for-Availability (CfA), is becoming increasingly popular. The CfA is intended to incentivise industry to make systems more reliable and thus increase system availability. However, performance agreements can only be beneficial “if the operations strategies are properly and effectively implemented,” and academic literature provides little guidance regarding how this should be done (Datta & Roy, 2011). Consequently, the following research questions can be formulated: “How should operations strategies for PBC be formulated?”, “How should operations strategies for PBC be implemented?”, and “How can PBC be utilised in order to fulfil the ambitions of CfAs?”

In Operations Management, there have been many suggestions for how “Competitive Priorities” (Ward et al., 1998) or “Performance Objectives” (Slack et al., 2010, p. 40) should be described, and how they should be used in order to satisfy customers. Four or five dimensions are usually used to describe this aspect of Operations Management. However, based on the reported research, it is clear that in the UK defence sector, only three dimensions are utilised; speed (faster), cost (cheaper), and quality (better), whereas dependability and flexibility are not used explicitly. Furthermore, for the three dimensions that are used, there have been problems with definition, measurement, and comparison (see Ekström, 2012). In addition, there are “major problems that seriously limit an objective and accurate assessment of purchasing performance” (van Weele, 2002, p. 258). Hence, in the focal context, the following research question emerges: “How should performance objectives be defined for a DPA in order to be useful to satisfy its customers (the Armed Forces) as well as its owners (the politicians)?”

Howard and Caldwell (2011, pp. 6–9) make a case for why traditional procurement methods cannot buy complex performance. There is a need for new theory in the area of procurement of complex products and integrated services, and Howard and Caldwell (2011, p. 16) propose that the emerging area of Procuring Complex Performance (PCP) might be the answer. Spring and Mason (2011, p. 105) suggest that BMs may offer a way to grasp the complexity of PCP. This leads to the following research questions: “How can traditional procurement methods handle the complexity of procurement of complex products and

integrated services, that is, complex performance?” and “How can the concept of BMs be used in conjunction with the concept of PCP in order to handle the complexity of procurement of complex products and integrated services?”

According to van Weele (2002, pp. 140–150), the different segments in Kraljic's portfolio correspond to different possible strategies, and partnership should be selected for strategic products. However, not all relationships between buyer and supplier should “be moved into a more partnership style” (Cooper et al., 1997), which leads to the following research questions: “How should a DPA decide with which contractors to partner?”, and “How should a DPA decide between different forms of price agreements and performance agreements?”

Research has demonstrated that it is difficult to differentiate between different forms of Public Private Participation in the area of defence acquisition. Consequently, in the area of defence acquisition, there is a need for a new mechanism for differentiating between different forms of Public Private Participation, which leads to the following research question: “How should different forms of Public Private Participation be differentiated between in the area of defence acquisition?”

#### ***Previous Research: Selviaridis (2014)***

In 2014, that is, during the still ongoing restructuring project, Selviaridis (2014) conducted a conceptual pre-study, with the purpose of “exploring and increasing awareness of the concept of performance-based contracting (PBC) capabilities, as well as to examine what types of capabilities the Swedish defence agencies should consider for implementing a performance-based defence acquisition and logistics model.” In addition, the study aimed at “identifying relevant theoretical perspectives for empirically studying, as a next step, capability development in performance-based contracting.” In line with this dual purpose of the pre-study, three distinct research questions were formulated:

- Research Question 1: What are performance-based contracting capabilities?
- Research Question 2: What types of capabilities should Swedish defence agencies consider to design and manage performance-based contracts as part of the transition towards performance-based defence acquisition?
- Research Question 3: Which theoretical perspectives and/or conceptual frameworks are useful for empirically studying capability development in performance-based contracting in the Swedish defence context, and why?

In the final report, Selviaridis (2014) gave the following recommendations for future empirical research:

Focus on the learning processes, structures and mechanisms by which Swedish defence agencies develop their know-how and capabilities in performance-based acquisition and contracting. “Are there any explicit processes and mechanisms in place?”, “How is such know-how articulated and codified, if at all?”, “What is the rate of learning, and how is that affected by the organisation's absorptive capability and prior knowledge?”

In light of the ongoing reformation project and the shift of emphasis towards a performance-based acquisition model, focus on how individuals, specific divisions/functions, and even whole authorities (e.g., FMV and the Armed Forces) come together to (re)combine and integrate their know-how and develop the new capabilities associated with the performance-oriented acquisition model. It will also be interesting to investigate the role of path-dependence and tacit knowledge in this process of capability development.

Focus on the role of trial and error, experiential learning, and experience/knowledge accumulation in PBC capability development and evolution over time. Capability development in PBC presupposes the existence of dynamic, meta-capabilities of learning and adapting in light of experiences from previous acquisition projects and suppliers as well as within cross-organisational and cross-functional acquisition teams.

Focus on organisational routines regarding acquisition and contracting tasks within the relevant defence authorities (e.g., FMV). Such a study would try to empirically investigate the ostensive and performative aspects of such routines and how their interactions may affect learning and know-how development over time. For instance, how enactment of formal acquisition guidelines and procedures guides actual practices and whether any divergence and lessons learned from acquisition project experiences are fed back and reflected in the adjusted formal rules. Also, insofar as the reformation project entails changes in rules and standard operating procedures regarding acquisition and contracting, it would be interesting to examine how such rules are decided, by whom, and how they attempt to codify the ostensive aspects of performance-based acquisition routines.

### ***The Current Transformational Initiative—Restructuring of Defence Logistics***

The former Chief of Defence Logistics, Major General Bengt Andersson, at an informal meeting, formulated the rhetorical questions: “How good is defence logistics, and how do we know that?” As a direct consequence of these questions, the following research questions were formulated (Ekström, 2013b): How good (effective, efficient) is our military logistics/defence supply and support chain? (i.e., the creation of a base line); How do we know that? (i.e., the establishment of a rigorous methodology for evaluation); and How can we improve? (i.e., the invention and evaluation of new concepts for development).

The current Chief of Defence Logistics, Rear Admiral Thomas Engevall, has prioritised nine areas of defence logistics for development (The Swedish Armed Forces, 2015): “Implementation of immediate actions,” “Defence logistics for operations,” “The dependence of defence logistics on the private sector,” “Defence logistics—a part of Host Nation Support (HNS),” “The development towards a new organisation for the Swedish Armed Forces, with implementation during 2016,” “The repair debt,”<sup>4</sup> “A strategy for the provisioning of personnel to defence logistics,” “Capability in health and medical support,” and “Supply and support chains.” While these prioritised areas of defence logistics do not constitute areas of research per se, some of these areas provide justification from the highest authority for the proposed research agenda, as well as some guidelines regarding prioritisation of research efforts.

### **A Research Agenda for Swedish Defence Acquisition**

The proposed research agenda is a compilation and condensation of research questions that have been suggested in previous research. Research issues and research questions are not presented in a prioritised order. However, the presented research issues and research questions have validity for the Swedish Armed Forces and for FMV, since

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<sup>4</sup> The so-called repair debt is due to a number of years of neglect, where necessary repairs have been given too low priority. As a consequence, availability of equipment currently constitutes a major problem.

research questions of a more general or theoretical character have been excluded from the proposed research agenda.

### ***Sourcing Issues***

The question of make-or-buy is ever-present in defence acquisition. For complex equipment systems (e.g., platforms), the order of priorities is a given from the political level (The Swedish Armed Forces, 2007): Adapt existing equipment, buy Off-the-Shelf (OTS; if possible in cooperation with other nations), and, as a last resort, develop new systems (if possible, in cooperation with other nations). Nevertheless, there remain several issues that could be researched:

- How can the driving forces behind governmental outsourcing initiatives be described?
- How can defence acquisition satisfy the customers' requirements for increased, or maintained, quality, speed, dependability, and flexibility; and the politicians' demands for reduced cost?
- How should a DPA decide what to make and what to buy?
- Which procedures, methods, and tools can be used in the decision-making process?
- How can portfolio management and category management be used in the make-or-buy decision?
- How can a Public Sector Comparator (PSC) be used by a DPA when deciding between traditional procurement and emerging forms of Public Private Participation?
- How can traditional procurement methods handle the complexity of procurement of complex products and integrated services, i.e., Procuring Complex Performance (PCP)?
- When is outsourcing the most effective and efficient solution?
- Why is outsourcing the most effective and efficient solution in these instances?
- Are there other, organic solutions in these instances, i.e., could comparable in-house solutions be achieved?
- Which dimensions of performance (e.g., speed, quality, cost, flexibility, and dependability) should be included in the decision?
- Should these dimensions of performance be given the same weight in the decision?
- Should decisions be made based on peace-time effectiveness and efficiency, or should operational effect also be part of the equation?
- How should effect and capability be balanced?
- How should operational effect and market orientation be balanced?
- How should it be ensured that increased performance in one area does not lead to decreased performance in another area?

The issue of Value-for-Money (VfM), or perhaps Best-Value (BV) would be a more appropriate term, is complex in defence acquisition. First of all, the political level must clarify if VfM should be achieved for the taxpayer from the point of view of the nation as a whole, the public sector in general, or the defence sector in particular. If it unequivocally is VfM for

the defence sector that should be achieved, then there are nonetheless many questions that could be researched:

- How should VfM be defined?
- Is it VfM from the point of view of the acquisition of a system, VfM from the life-cycle perspective on the system, VfM from the life-cycle perspective on the capability that is going to be supported, or VfM based on something else, that should be used in the sourcing decision?
- How should Value-for-Money (VfM) be calculated?
- Should operational effect be part of the equation?
- With what baseline (past, present, and/or future) should VfM be compared?
- How should that baseline be established and updated?
- For longer term service contracts, how should a future baseline be calculated?
- How can VfM be ensured without competition and risk transfer, which are two of the most important prerequisites of VfM?
- How should a DPA combine the supply dependability objective (i.e., to assess and/or form dependable supply chains to secure reliable and sustainable deliveries of goods, services, and know-how to form and maintain defence capabilities in the required state of operational readiness) with the VfM objective (i.e., to buy what is needed cost effectively, which should not be taken to mean “at least cost,” and in accordance with Defence’s quality and schedule requirements)?

When it is decided to buy goods or services, rather than to produce them in-house, new questions arise and new decisions have to be made. This means that there are ample opportunities for issues to research:

- When contractors are involved in the provisioning of goods and services, how should risk sharing, reward sharing, and information sharing be handled?
- How should OTS goods and services be selected?
- How should OTS be used in order to enhance performance?
- How should the contributions of OTS be evaluated?
- How do roles and responsibilities change because of OTS products and services?

### ***Business Model Issues***

The concept of business models can be utilised at three different levels in defence acquisition (Ekström, 2015): At the top (strategic) level, it can be used to describe how the government elects to organise defence acquisition, that is, how the government conducts its business; at the middle (operational) level, it can be used to describe a spectrum of different ways in which a defence acquisition organisation can elect to involve the defence industry in the provision of goods and services to the Armed Forces; and at the lowest (tactical) level, it can be used to describe how an individual defence acquisition project implements defence acquisition strategies in a particular defence acquisition contract.

At the top level, decisions are typically made by the Ministry of Defence (MoD). The type of decisions that have to be made regarding business models at the MoD level can be regarded as organisational—How should the MoD organise defence acquisition? At the middle level, decisions are typically made by a DPA, or its equivalent organisational unit



within the MoD, the Armed Forces HQ, or within the different services. The type of decisions that have to be made regarding business models at the DPA level can be regarded as co-operational—How should the defence industry be involved in the provision of goods and services? At the lowest level, decisions are typically made by the defence acquisition project manager. The type of decisions that have to be made regarding business models at the defence acquisition project level can be regarded as contractual—How should the defence acquisition contract be designed?

At the top and middle level, the notion of a business model can be interpreted as a taxonomy, which enumerates a *finite* number of business model types. The top and middle level business models refer to the way in which the MoD wants to do business. At the lowest level, a business model can be interpreted as a conceptual model, which allows an *infinite* number of business models. At this level, the concept of business models refers to a conceptualisation of the way in which an organisation does business in order to reduce complexity to an understandable level. Consequently, business models at the lowest level emphasise the model aspect, which can be used in a specific defence acquisition project, prior to signing a particular contract, in order to model and design the deal and contract at hand. Advocates of this viewpoint propose meta-models that consist of building blocks and relationships which reflect the complexity that they aim to describe.

At the top level, or the strategic level, the government must decide how to organise and conduct defence acquisition. This can be done in several different ways. Research questions that could be addressed include the following:

- How should the government best conduct and organise defence acquisition?
- Should defence acquisition be conducted directly by the Ministry of Defence (MoD), by a joint department within the Armed Forces Head Quarters (HQ), by separate organisations within the different services (Army, Navy, Marine Corps, and Air Force), or by a separate authority (independent Defence Procurement Agency, DPA)?
- Should these organisations deal only with the acquisition of equipment, or should they have the integrated responsibility of acquisition of equipment as well as providing logistical support to that equipment?
- Should decisions regarding conduct and organisation be based on how they affect proximity to policy making, professional specialisation, economies of scale, proximity to the end user (warfighter), or perhaps some other factors?
- How can misalignment between intended and implemented strategy be avoided?
- How can professionalism and specialisation in defence acquisition be ensured?
- How can ineffectiveness and inefficiency, i.e., poor performance, be avoided?
- How can the problem of “throwing it over the wall” (a problem that may occur when separate organisations, e.g., a DPA and a DLO, are responsible for acquisition of equipment and logistical support to that equipment, respectively) be avoided?
- How should potential gains in, for example, effectiveness and efficiency (i.e., enhanced performance) in the defence acquisition process and/or project be compared with potential losses in robustness, flexibility, and dependability in military logistics, or consequences for availability, readiness, capability, and

effect for the military system as a whole, i.e., how can the problem of sub-optimisation be avoided?

At the middle level, or the operational level, the defence acquisition organisation, for example, a DPA, must decide to what extent the defence industry should be involved in the provision of goods and services to the Armed Forces. The answer to this question can vary considerably for different goods and services. Questions to be researched at this level could include the following:

- How can the concept of BMs be used in order to handle the complexity of procurement of complex products and integrated services?
- How can Kraljic's product portfolio matrix, or its derivative category management, or any other tool, be used to decide which goods and services that are going to involve industry?
- Can goods and services be categorised into relatively homogenous groups, which should "always" be dealt with in a similar fashion, e.g., "always buy" or "always outsource"?
- How should different forms of Public Private Participation on the spectrum from government provision to privatisation be defined and differentiated from each other in the area of defence acquisition?
- Which Public Private Business Models (PPBMs; see Ekström, 2012), e.g., service provision contracts, outsourcing, contracting out, different forms of PPPs (including the Private Finance Initiative, PFI), franchising, concessions, and Joint Ventures (JVs) should be used by the DPA at the operational level in order to involve the defence industry?
- How should traditional procurement be distinguished from emerging forms of Public Private Participation (i.e., different forms of PPC or PPPs)?
- How can the generic PPBM be used in order to establish, define, and label different classes (i.e., groupings of similar configurations) of PPBMs for defence acquisition?
- Can PPBMs be categorised in such a way that a particular PPBM always correspond to a specific category of goods or services?

At the lowest level, or the tactical level, a defence acquisition project manager must decide how to contract for a specific good, service, or facility. At this level, the business model can be regarded as a conceptual tool that contains a set of building blocks and their relationships. There are several alternative frameworks to use at this level. The following are research questions to address at this level:

- Which business model framework should be used at the tactical level?
- How should new CBPs be selected, adapted, and adopted?
- How should new CBPs be used in order to enhance performance?
- How should the contributions of new CBPs be evaluated?
- How do roles and responsibilities change because of new CBPs?
- How should a DPA decide with which contractors to partner?
- How should a DPA decide between different forms of price agreements and performance agreements?
- How should new BMs be selected, i.e., how should the building blocks in the BM framework be configured, for a particular deal?



- How should new BMs be configured in order to enhance performance?
- How should the contributions of new BMs be evaluated?
- How do roles and responsibilities change because of new BMs?
- How can the PPBM be used in order to establish, define, and label different individual BMs for defence acquisition?
- How should it be decided if the public or the private sector should be responsible for designing, building, financing, owning, operating, maintaining, and managing, and if/when leasing and transfer should occur?

PBC and PBL can be regarded as a special form, that is, a particular configuration, of the business model concept at the tactical level (Ekström, 2012, 2013). There are a number of research questions that could be addressed for PBC and PBL:

- How should performance be defined?
- How should it be decided *what* to measure in order to avoid the “definition problem” (Ekström, 2012)?
- How should it be decided *when, where, and how* to measure in order to avoid the “measurement problem” (Ekström, 2012)?
- How should it be decided *with what* to compare in order to avoid the “comparison problem” (Ekström, 2012)?
- How should PBC be described, i.e., which dimensions could be used, in order to make a comparison with traditional Cost-Plus and Fixed-Price Contracts possible?
- How do the emerging performance agreements such as PBC relate to traditional price agreements such as Cost-Plus and Fixed-Price Contracts?
- How should operations strategies for PBC be formulated?
- How should operations strategies for PBC be implemented?
- How should performance objectives be defined for a DPA in order to be useful to satisfy its customers (the Armed Forces) as well as its owners (the politicians)?
- Which factors are considered to influence PBC in Sweden?
- Are these factors considered to be barriers or enablers when implementing PBL?
- How are these factors related to each other?
- How well do penalty mechanisms work in long term relations between the public and the private sector?
- Which are the Critical Success Factors (CSFs) for PBC?

### **Internal Issues**

Internal issues in the DPA include corporate culture, organisation, competencies, and so forth. The research questions that could be of interest to investigate include the following:

- How should the internal cultural challenges, which the new tasks, roles, and responsibilities bring about, be addressed?
- What form of organisation would adequately meet the new tasks, roles, and responsibilities?

- Which new competencies are required, and which existing competencies will become obsolete, because of the new tasks, roles, and responsibilities?
- How will the required competence be provided in the long term, within the Armed Forces as well as within FMV?
- How can the DPA develop from a peacetime, office-hours-only (“9-to-5”) defence procurement agency into an operational, round-the-clock (“24/7”) defence logistics organisation, adapted to provide support in different levels of military preparedness?
- How can the DPA develop from an engineering-oriented organisation, specialised in transforming the Armed Forces capability requirements into technical specifications and acquiring complex systems (“Technology for Sweden’s security”) into a market-oriented organisation, specialised in providing logistical support to the Armed Forces (“Efficient defence logistics—when and where it is needed”)?
- Which different solutions can contribute to the Armed Forces becoming a smarter customer?
- How are the Armed Forces and FMV going to work together in the existing interfaces, e.g., in the early phases of development projects?
- How are the Armed Forces and FMV going to participate in each other’s processes?
- Which complications will follow as a consequence of the new interfaces?
- How will these complications be resolved?
- Are there any explicit processes and mechanisms in place in the learning processes, structures, and mechanisms by which Swedish defence agencies develop their know-how and capabilities in performance-based acquisition and contracting?
- How is such know-how articulated and codified, if at all?
- What is the rate of learning, and how is that affected by the organisation’s absorptive capability and prior knowledge?
- How do individuals, specific divisions/functions, and even whole authorities (e.g., FMV and the Armed Forces) come together to (re)combine and integrate their know-how and develop the new capabilities associated with the performance-oriented acquisition model?
- What is the role of path-dependence and tacit knowledge in this process of capability development?
- How are trial and error, experiential learning, and experience/knowledge used in order to systematically learn, at the organisational level, from previous acquisition project experience and suppliers, as well as within cross-organisational and cross-functional acquisition teams?
- How are organisational routines regarding acquisition and contracting tasks used within FMV?
- What are the ostensive and performative aspects of these routines?
- How do the interactions between these routines affect learning and know-how development over time?

- How does enactment of formal acquisition guidelines and procedures guide actual practices?
- Are any divergence and lessons learned from acquisition project experiences fed back and reflected in the adjusted formal rules?
- If the reformation project entails changes in rules and standard operating procedures regarding acquisition and contracting, how are these rules decided?
- By whom are these rules decided?
- How do these rules attempt to codify the ostensive aspects of performance-based acquisition routines?

### ***Moral and Ethical Issues***

Moral and/or ethical issues may occur in association with outsourcing of military activities from the public sector to the private sector. Research questions could include the following:

- Which, if any, moral and ethical issues are associated with risk transfer to suppliers, e.g., contractors in the field?
- How should risk transfer to contractors be addressed?

### ***Supply and Support Chain Issues***

The supply and support chain issues include supply and support chain design issues, supply and support chain management issues, supply and support chain risk management issues, and supply and support chain performance measurement issues. Research questions that ought to be addressed in future research include the following:

- How good (effective, efficient) is the Swedish military logistics/defence supply and support chain? (i.e., the creation of a validated base line)
- How do we know that? (i.e., the establishment of a rigorous methodology for evaluation)
- How can we improve? (i.e., the invention and evaluation of new concepts for development)
- Are the life-cycle costs of complex weapon systems distributed in a similar fashion in Sweden as they are in the international experience?
- If not, how are life-cycle costs of complex weapon systems distributed in Sweden?
- If not, what are the causes of the differences?
- How should the military supply and support chains be redesigned in order to accommodate the new requirements of the reformed Armed Forces?
- How should strategic deployment (particularly transportation) capability for supplies and support be ensured?
- On PSOs, what can be done in order to open up strategic, operational, and tactical transportation more to competition from the private sector?
- How should overseas supply and support be ensured?
- How should the supply and support chains be managed?
- Who should manage the supply and support chains from “factory to foxhole”?
- How can contracts be used to manage the supply and support chains?



- Which different types of risks are inherent in defence procurement and the military supply and support chains?
- How have these risks traditionally been managed?
- How do OTS, new ICT, CBPs, and PPPs influence existing risks?
- What new risks are introduced by OTS, new ICT, CBPs, and PPPs?
- How should the existing and new risks be managed?
- Who should manage the existing and new risks?
- How can contracts be used to manage the existing and new risks?
- How should performance be evaluated?
- Which measures of performance (MOPs) should be used?
- How should OTS, new ICT, CBPs, and PPPs be utilised in order to enhance performance?
- How should the contributions of OTS, new ICT, CBPs, and PPPs be evaluated?
- When FMV takes over the responsibility, how are the Armed Forces going to make sure that its units are being supplied with what they need?
- Which consequences for operations will the restructuring bring about?
- Which problems will occur because of the demarcation between logistics close to combat, i.e., the Armed Forces responsibility, and other logistics support, i.e., FMVs responsibility?
- On PSOs, how can camps be designed in order to allow for dual use, i.e., other use (e.g., schools or hospitals) after the military has left the camp?
- The Swedish Public Procurement Act (LOU) is a major obstacle to achieve effective and efficient logistics in PSOs: How can logistics change in order to better fit with the limitations of the Act, and how can the Act be adjusted in order to better fit the requirements of logistics?

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